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unique in its way as are the zigzag ridges of the Pennsylvania Alleghenies. Its development, on the more-than-one-cycle scheme, appears to have been as follows: The great body of complicated crystalline rocks was effectively baseleveled in ancient times, and covered unconformably with early paleozoic strata. The compound mass was afterwards broken by numerous faults, which divided it into many irregular, (nearly) vertical prisms; and the prisms were irregularly jostled and tilted. At that time the surface must have been characterized by many displaced blocks, topped with paleozoic strata and separated by fault scarps. Then the whole district was again baseleveled; this being indicated by the general accordance of upland heights to-day, irrespective of faults. On the peneplain thus produced, the paleozoic strata would remain only where they lay below baselevel. A broad upwarping introduced a new cycle, which has now advanced (glacial erosion included) so far as to have almost entirely consumed the previously inaccessible remnant-covers of paleozoic strata, thus developing fault-line scarps in good number; while the fault lines through the crystalline uplands are now marked by narrow fault-line valleys.

This case is similar in some respects to that of the Hurricane ledge in Arizona, next north of the Colorado canyon. When first described by Dutton (Monogr. II., U. S. Geol. Surv.), this strong escarpment was interpreted as marking a recent fault, and its height was taken as a measure of the fault. Reasons have since been given for believing that the fault is not recent (where the N-S fault line crosses certain erosional E-W escarpments, the corresponding members of the latter are out of line by several miles, and this departure from alignment must represent the excess of escarpment retreat in the heaved block over that in the thrown block); that the original displacement was essentially obliterated by baseleveling (a level, unbroken lava flow crosses the fault line at one point, passing evenly from strong to weak rocks); and that the existing scarp is a fault-line scarp produced by the action of re-

vived erosion on the weaker strata along one side of the fault line. W. M. D.

#### STAFF OF THE ROCKEFELLER INSTITUTE

THE Rockefeller Institute for Medical Research has adopted as titles for its staff member, associate member, associate, assistant, fellow and scholar of the Rockefeller Institute, and has made the following list of appointments:

*Member of the Institute and Director of the Laboratories*—Simon Flexner, pathology.

*Member of the Institute*—S. J. Meltzer, physiology and pharmacology; E. L. Opie, pathology; P. A. Levene, biological chemistry.

*Assistants of the Institute*—Hideyo Noguchi, pathology; John Auer, physiology; Alexis Carrel, experimental surgery; J. W. Jobling, pathology; Nellie E. Goldthwaite, chemistry.

*Fellows of the Institute*.—C. M. A. Stine, biological chemistry; Donald Van Slyke, biological chemistry; Martha Wollstein, pathology; Maud L. Menten, pathology; Mabel P. Fitzgerald, bacteriology; Don R. Joseph, physiology; Benjamin T. Terry, protozoology; Thomas W. Clarke, pathology.

*Scholar of the Institute*—Bertha I. Barker, pathology.

Grants to aid special researches have been made to the following: Robert M. Brown, New York; C. H. Bunting, Charlottesville, Va.; Katherine Collins, New York; Cyrus W. Field, New York; N. B. Foster, New York; Joel Goldthwaite, Boston; Holmes C. Jackson, Albany; Arthur I. Kendall, New York; Waldemar Koch, Chicago; W. G. MacCallum, Baltimore; Wilfred H. Manwaring, Bloomington, Ind.; J. W. D. Maury, New York; F. G. Novy, Ann Arbor; W. Ophüls, San Francisco; Richard M. Pearce, Albany; H. T. Ricketts, Chicago; Hermann W. Schulte, New York; Charles E. Simon, Baltimore; Aldred S. Warthin, Ann Arbor; Francis C. Wood, New York.

#### SCIENTIFIC NOTES AND NEWS

SIR JOSEPH D. HOOKER, who celebrated his ninetieth birthday on June 30, has been made a member of the Order of Merit.

LORD LISTER was on June 28, at the Guildhall, presented with the freedom of the City of London in a gold casket, in recognition of "the invaluable services rendered to humanity by his discovery of the antiseptic system of treatment in surgery."

PROFESSOR WILLIAM JAMES has been elected a corresponding member of the British Academy.

AT its recent commencement, Brown University conferred its doctorate of laws on Dr. C. Barus, professor of physics and dean of the graduate department, and the degree of doctor of science on Dr. Wallace C. Sabine, professor of physics at Harvard University and dean of the Lawrence Scientific School.

LAFAYETTE COLLEGE has conferred the degree of doctor of science on President F. W. McNair, of the Michigan College of Mines.

THE University of Manchester has conferred the doctorate of science on Dr. George E. Hale, director of the Solar Observatory of the Carnegie Institution and the degree of doctor of laws on Baron Kikuchi, lately minister of education in Japan.

DR. OSCAR LOEW, since 1901 professor of agricultural chemistry in the University of Tokyo, has accepted the position of chemist in the Porto Rico Agricultural Experiment Station.

DR. W. A. HENRY, professor of agriculture in the University of Wisconsin since 1880, director of the Agricultural Experiment Station since 1887 and dean of the College of Agriculture since 1892, has been made professor emeritus. He proposes to make his home in Wallingford, Conn.

MR. W. P. PYECRAFT has been appointed assistant on the permanent staff of the zoological department of the British Museum.

SIR E. MAUNDE THOMPSON, director of the British Museum, has been elected president of the British Academy.

DR. WILFRED H. MANWARING, head of the Department of Pathology in Indiana University, sailed from New York on July 14, to spend two years in research in European laboratories, under the auspices of the Rocke-

feller Institute for Medical Research. His address will be: Care of Dresdener Bank, Berlin.

THE cooperative studies of the Atlantic Coastal Plain stratigraphy being conducted by the United States and the various State Geological Surveys were begun in South Carolina on July 1. Several parties will be in the field during the summer and autumn under the supervision of M. L. Fuller of the United States Geological Survey, acting in cooperation with Dr. Earle Sloan, state geologist of South Carolina.

DR. JOHN M. CLARKE, director of the New York Geological Survey, will attend the centenary of the Geological Society of London as delegate from the state survey and from the Section of Geology, American Association for the Advancement of Science. The organization of the London society stimulated in very large measure that interest in geological science in America which gave birth to the earliest state surveys and the influence of its membership was particularly manifested in the original conception and execution of the New York Survey, which was organized in 1836 and has had an uninterrupted existence of seventy-one years. William Smith, Bigsby, De la Beche and Conybeare molded the ideas of early American geologists, and the personal influence of Murchison and Lyell upon James Hall was largely responsible for the classification of the New York series of geological formations. Dr. Clarke also attends the meeting of the Geological Society of Germany in Basel, whence a two weeks' trip across the Alps will be made under the guidance of the German and Swiss Geologists.

DR. HERMANN VON SCHRENK has resigned from the U. S. Department of Agriculture, with which he has been connected for the last eleven years, and, with two of his former assistants, has opened an office as consulting timber engineer at St. Louis. The name of the firm is von Schrenk, Fulks and Kammerer. Dr. von Schrenk has been appointed pathologist of the Missouri Botanical Garden, where he will have a fully-equipped pathological laboratory with one or more assistants.

WE learn from *Nature* that the council of the Royal Society of Edinburgh has awarded the Keith prize for the biennial period 1903-5 to Dr. Thomas H. Bryce for his two papers on "The Histology of the Blood of the Larva of *Lepidosiren paradoxa*," published in the *Transactions* of the society; and the Makdougall-Brisbane prize for the biennial period 1904-6 to Dr. Jacob E. Halm for his two papers on "Spectroscopic Observations of the Rotation of the Sun" and "Some Further Results obtained with the Spectroheliometer," and for other astronomical and mathematical papers published in the *Transactions* and *Proceedings* of the society.

DR. JAMES MERRILL SAFFORD, emeritus professor of geology in Vanderbilt University and for many years state geologist of Tennessee, died at Dallas on July 3, at the age of eighty-five years.

SIR WILLIAM PERKIN, F.R.S., the eminent British chemist, died in London on June 14, at the age of sixty-nine years.

SIR WILLIAM C. GAIRDNER, F.R.S., formerly professor of medicine in the University of Glasgow, died on June 28, at the age of eighty-two years.

CIVIL service examinations are announced as follows: On August 5, to fill two or three vacancies in the position of aid in arboriculture in the Bureau of Plant Industry, at salaries ranging from \$600 to \$1,000; on August 14 and 15 for the position of computer in the Supervising Architect's Office, at a salary of \$1,000 to \$1,600, and on August 14 and 15 for scientific assistant in animal pathology in the Bureau of Animal Industry, at a salary of \$840.

A TELEGRAM has been received at the Harvard College Observatory from Professor Percival Lowell, director of the Lowell Observatory, stating that "South American Lowell Expedition cables double canals seen, oases photographed."

THE trustees of the Geologists' Association have transferred to the University of London the library of the association now at Uni-

versity College on condition that it form part of the library of University College.

THE fifth meeting of the Association of Economic Biologists has been held at the Imperial Institute, South Kensington, London, under the presidency of Mr. A. E. Shipley, F.R.S.

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#### UNIVERSITY AND EDUCATIONAL NEWS

THE late M. Commercy has left \$800,000 to the University of Paris for scholarships for scientific research.

MR. ANDREW CARNEGIE has given \$25,000 to Roanoke College, which has collected \$35,000 on which this gift was conditional.

*The Experiment Station Record* states that at the Massachusetts College a department of agricultural education has been established, its duties to include both instruction and research. This is an entirely new departure at the college and is believed to be the first attempt in this country to organize this kind of work on so broad a foundation. Normal courses will be offered to prospective teachers, and studies will be made of problems confronting agricultural teaching in colleges and schools of various grades, and of agricultural extension with a view to introducing agriculture into the elementary schools, establishing agricultural high schools, and correlating and unifying the agricultural instruction given in the state. The work will be in close cooperation with existing educational agencies, especially the state industrial commission. W. R. Hart, of the Nebraska State Normal School, who has had long experience in teaching and is the author of a number of monographs and other articles on educational topics, has been selected as the head of the department and will begin his duties with the next college year.

DR. ALEX. HILL and Sir Thomas Raleigh, commissioners of the treasury, have made to the Liverpool Corporation a report dealing in detail with the several departments of the university in view of the renewal of the grant of £10,000 to the university by the corporation. The commissioners praise the work that is being done at the university, and the finance